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Abstract

This paper analyzes the interaction between caste relations and city space, and its impact on economic development in Indian cities. Much of the literature on caste has focused on rural India, although there is a recent and growing literature that examines caste and caste-based discrimination in cities. We focus on this strand, particularly, studies that have examined caste-based residential segregation in cities. Recent studies have argued that Indian cities are highly segregated along caste lines. Using a socio-spatial methodology, and data from a spatially representative survey that we specially designed to uniquely explore city spaces, we too establish that there is high segregation at the smallest residential spatial scale. However, as expected, there is considerably less segregation at higher spatial scales. What is less known is that Indian cities are much less segregated in terms of caste than American cities are in terms of race at this comparable higher spatial scale. This also has an important consequence - greater integration at this higher spatial scale has important material benefits - economic development defined in terms of lower poverty and higher educational attainment is significantly higher, both for the overall population and for deprived social groups.

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“What is the village but a sink of localism, a den of ignorance, narrow-mindedness, and communalism ...”

- B.R. Ambedkar.¹

“I say this with full deliberation — that the salvation of this province and, if I may say so, the salvation of the whole of India lies in greater urbanisation: in reviving our towns, in building our industries, in removing as much population as we possibly can from our villages to the towns.”

- B.R. Ambedkar.²

1. Introduction

Have Indian cities acted as a refuge from caste-based iniquities prevalent in villages, as Ambedkar had hoped? Indian villages are still characterized by stark patterns of caste-based spatial segregation, with ex-untouchable castes (*Dalits*) sometimes relegated to the peripheries of the village. But what kinds of spatial patterns of segregation and coexistence do Indian cities exhibit? What are the consequences of these patterns? This paper analyzes the interaction between Indian city spaces at multiple scales and caste relations and answers such underexplored questions. By using a primary survey from Hyderabad and Mumbai that contains finer data than publicly available secondary databases, we show that segregation is stark if we spatialize at small units (Enumeration Blocks, EBs). However, segregation is modest when we consider larger units (Census Wards, Subdistricts, Municipal Wards).³ While this result is to be expected, social processes that operate in these larger neighborhoods are different from processes in EBs. Given this, we demonstrate that higher integration at the level of larger neighborhoods is causally

¹ From the debates of the Constituent Assembly. Also see Ambedkar (2016). As is widely known and discussed in the media in recently (e.g., Mishra 2015), Ambedkar saw migration to cities as a way of escaping caste oppression.

² From Vol. 2, p. 32 of Dr Babasaheb Ambedkar Writings and Speeches (BAWS) (various years), Volumes 1 to 21, Government of Maharashtra, Mumbai.

³ We describe these spatial units in detail in the next section, but they are from the decennial Census. EB is the smallest/lowest spatial unit, followed by the Census Ward.

linked to better development outcomes – lower likelihood of poverty and higher education. To the best of our knowledge, our paper is the first to document patterns of segregation and coexistence in Indian cities with all major caste groups (Scheduled Tribes (ST), Scheduled Castes (SC), Other Backward Classes (OBCs) and so-called upper castes) and rigorously establish the benefits of coexistence.

In examining the intersection between city space and caste, we attempt to redress an imbalance in the literature on caste in India. Although a voluminous and multidisciplinary scholarly literature exists on caste, it has disproportionately focused on rural India.⁴ Many terms that have become part of the established “caste jargon” e.g., *Sanskritization* and *Dominant Caste*, emerged from studies of rural India by scholars such as Srinivas (1998). Many important debates, including those that shaped the Indian constitution, and thereby the Indian nation state, also centered on caste relations in villages.⁵ India has been urbanizing since independence, and in recent decades, the urban sector has been growing in importance and driving the Indian economy (Vakulabharanam and Motiram 2012). Therefore, we need more studies on urban India and newer frameworks and concepts to understand the reality of caste in Indian cities. Our paper should be seen in this broader context.

This is not to say that caste in urban India is not witnessing attention. In fact, several aspects of caste in urban India are being studied.⁶ What is directly relevant for us is the literature on caste-based residential segregation in Indian cities. Publicly available secondary databases on India such as the National Sample Survey (NSS) database or the India Human Development

⁴ Some classic and more recent references are - Srinivas (1996), Gupta (1997, 2000), Dirks (2003), Rawat and Satyanarayana (2016) and Jodhka (2017).

⁵ For a discussion of debates among Ambedkar, Gandhi and Nehru, see Judge (2014) and the references therein.

⁶ To name a few: discrimination in the labor market (Banerjee and Knight 1985; Madheswaran and Attwell 2007; Chakravarty and Somanathan 2008), differences among caste groups in well-being (Jayaraj and Subramanian 2013), caste and entrepreneurship/business (Sadana and Thorat 2009; Jodhka 2010; Iyer et al. 2013), caste associations (Waghmare 2019) and caste and land struggles in peri-urban areas (Upadhyaya and Rathod 2021).

Survey (IHDS), that are used by researchers and policy makers, lack data on intra-city spatial units. Therefore, studies that have relied on secondary statistical data have used the decennial Census. Singh and Vityathil (2012) use the 2001 Census to document high caste-based residential segregation in seven large Indian cities (Mumbai, Delhi, Kolkata, Chennai, Bangalore, Ahmedabad, and Hyderabad). Sidhwani (2015) uses data from the latest (2011) Census to document a high level of caste-based residential segregation in ten large Indian cities (Delhi, Mumbai, Bangalore, Hyderabad, Ahmedabad, Chennai, Kolkata, Pune, Surat, and Jaipur). It also documents significant correlation between proportion of Scheduled Caste (SCs) and Scheduled Tribes (STs) and access to a public good (in-house water), a private good (in-house latrine) and a luxury good (ownership of a two-wheeler).⁷ While these studies have focused on the Census-ward level, Bharathi et al. (2019) also document stark segregation patterns in five major Indian cities (Bengaluru, Chennai, Delhi, Kolkata and Mumbai) using the Enumeration Block (EB) as the spatial unit and data from the 2011 Census.

While the above studies are insightful and provide quantitative estimates across several cities, their shortcomings follow from two limitations of the Census data. First, only three groups are enumerated in the Census – SCs, STs and Others – OBCs are not enumerated separately but subsumed under Others. Second, while information on the populations of these groups is available at the EB, Census Ward and District levels, data on religious groups is unavailable for these intra-city spatial units. As a result, the interaction between caste and religion within the city cannot be examined; a disaggregation of caste groups on religious lines is also not possible.

Complementing the above studies, some scholars have used a qualitative or ethnographic approach to study caste-based residential segregation. For example, Banerjee and Mehta (2017)

⁷ Also relevant are Jana and Bhan (2015) and Haque (2016), which deals with caste-based residential segregation in large cities in West Bengal.

focus on a Dalit neighborhood in Ahmedabad to make a distinction between “post-liberalization” and “pre-liberalization” Dalit ghettos, arguing that caste identities are transformed rather than eliminated in the processes of urbanization and economic mobility. Another example is Ganguly (2018), who studied a Balmiki colony in Delhi. These studies are rich in detail, particularly in terms of the mechanisms through which spatial and other disparities are reproduced. However, they are restricted to a specific community and/or a particular city or sometimes even a single neighborhood in a city.

We therefore designed and conducted a primary survey in Hyderabad and Mumbai that overcomes the limitations of secondary statistical databases mentioned above. We deploy a socio-spatial methodology wherein space and social relations influence each other, to divide the two cities into zones. Both this survey and the socio-spatial methodology are described in detail in the next section. This survey is spatially representative and allows us to estimate residential segregation/coexistence at various spatial scales – EB, Census Ward, Subdistrict (for Hyderabad) and Municipal Ward (for Mumbai). We show (in Section 3) that caste-based residential segregation is high for smaller spatial units like EBs but is lower for larger spatial units like Subdistricts and Municipal Wards. While the EB-level finding is consistent with previous studies (mentioned above), it is worth emphasizing that we have considered OBCs as a separate group, whereas these studies have not. In both cities, zones (which are larger than subdistricts and municipal wards) are characterized by considerable coexistence of caste groups. While the above studies, implicitly or explicitly, convey the message that caste-based segregation is undesirable, they do not rigorously demonstrate its negative effects. Using an instrumental probit regression, we do so (in Section 4) – higher neighborhood-level integration is causally linked to lower likelihood of poverty for households and higher likelihood of being better educated for adult

individuals – essentially caste-based spatial coexistence contributes to better development outcomes. We also identify some mechanisms that explain this result and discuss the policy implications of our findings (in Section 5).

2. Data and Methodology

2.1 Description of Data

Given the limitations of secondary data that we discussed above, we use data from a spatially representative survey in Hyderabad and Mumbai that we conducted during 2015-17. Mumbai is a large (“mega”) city in Maharashtra state in Western India, whereas Hyderabad is a large city that is the capital of Telangana state in Southern India.⁸ The survey is based on the spatial organization that is used by the Indian Census. According to the latest (2011) Census, Urban Agglomerations (UA) are spread across several “districts”, which are further divided into “Census Wards”, and finally into “Enumeration Blocks” (EBs). Hyderabad UA is spread across the districts of Hyderabad, Rangareddy, and Medak in the state of Telangana.⁹ While Hyderabad district is completely urban, the other two districts comprise both rural and urban areas. Census wards in Hyderabad district range in population size from 6,762 to 69,177 (with an average of 36,512.25). Mumbai UA is spread across Mumbai, Mumbai Suburban, and Thane districts. The first two districts are completely urban, and before the 2001 Census, were combined into a single district called Greater Bombay. The average populations of a Census ward in Mumbai and Mumbai suburban districts are 79,113.1 and 1,61,326.9, respectively.¹⁰

⁸ Mumbai and Hyderabad Urban Agglomerations have populations of 18.4 million and 6.81 million, respectively, according to the latest (2011) Indian Census (<https://censusindia.gov.in/nada/index.php/catalog/42876>).

⁹ Recently (and after the 2011 Census), Telangana state was reorganized, and new districts were created from existing ones. For details, see: <https://www.telangana.gov.in/about/state-profile>

¹⁰ EBs are considerably smaller than Census wards in all the three districts. For example, in Mumbai, the population sizes of small EBs are in single digits (e.g., 1 and 7) whereas larger ones have about a thousand residents (e.g., 1,193 and 1,224).

Our survey focuses on Hyderabad, Mumbai, and Mumbai Suburban districts, which cover a substantial portion of the Hyderabad and Mumbai UAs. The Census divides Hyderabad district into sixteen Subdistricts. Mumbai and Mumbai Suburban districts are together divided for administrative purposes into twenty-four Municipal Wards (which are different from and bigger than Census Wards). We used a multistage, stratified sampling design with Subdistricts and Municipal Wards as strata in Hyderabad and Mumbai, respectively. In both the cities, we selected 1,000 households spread across 100 EBs (10 for each EB).¹¹ We administered a detailed household schedule to each of the selected households, collecting information on demographic characteristics (e.g., household size, caste, religion), income, consumption etc.

For each household, we collected information on both caste (ST, SC, OBC or Others) and religion. This allows us to use a finer classification than possible from secondary data and to examine the interaction of caste and religion for intra-city spatial units. We conduct analysis for various intra-city spatial units using the following “social groups”: SCs and STs (Dalits, for short), OBCs, Muslims and Others. Since caste in India is a pan-religious phenomenon, the first two groups involve households from all religions. The third and fourth groups are drawn from the so-called upper castes, and Others are mostly upper-caste Hindus. We are treating Muslims separately both because they occupy a substantial share of both cities, particularly Hyderabad, and since concern has been expressed about their marginalized status in Indian cities (Gayer and Jaffrelot 2012).¹² Figure 1 presents the social group composition of the sample. More descriptive statistics of the sample will be presented in the sections below. Dalits are the least urbanized group in India, and this is reflected in the sample, in both the cities. OBCs and Others (upper-

¹¹ However, we were able to collect data from 980 households in Mumbai. In the coming weeks, we will make the survey data and relevant information publicly available.

¹² In a companion paper (Motiram and Vakulabharanam 2023), we have used the same primary data to examine ghettoization of Muslims in Hyderabad and Mumbai.

caste Hindus) are the largest social groups in Hyderabad and Mumbai, respectively. As is well-known, Hyderabad has a much higher proportion of Muslims than Mumbai.

Insert figure 1 here.

2.2 Socio-spatial Approach and Zones in Hyderabad and Mumbai

As we discussed in the introduction, we use a socio-spatial approach wherein space and social relations influence each other (Soja 1980). In line with this approach, we think of space in terms of both administrative units and as shaped by concrete history. Hyderabad is a “traditional” walled city, which is more than four centuries old.¹³ When India came formally under the British Crown (in 1858), it comprised many kingdoms and areas directly administered by the British. Hyderabad was part of the Nizam kingdom, the largest of such kingdoms, and had a colonial administrator resident in the city. We divide Hyderabad into four zones based upon its historical evolution from pre-colonial to present times: Old-Walled city, Nizam’s city, British-Resident city, and Neoliberal city. The Old-Walled city is the oldest and poorest part of the city. The emergence of Nizam’s city began during 18th-19th centuries; British-Resident city comprises the British resident and Cantonment areas and emerged during 19th-20th centuries; the Neoliberal city is associated with the emergence of the new economy which started in the 1970s. These zones and the corresponding subdistricts are depicted in figure 2.

Insert figure 2 here.

In contrast to Hyderabad, Mumbai is a much larger “modern” city with a different history (Dwivedi and Mehrotra 1995; Chandravarkar 2009; Dossal 2010). Unlike Hyderabad, Mumbai was directly administered by the British as part of Bombay presidency.¹⁴ The modern city of

¹³ In such cities, there was a physical wall protecting the inner core of the city. For a description of the evolution of the spatial organization of the city of Hyderabad, see Alam (1973).

¹⁴ The name of the city was changed from Bombay to Mumbai in 1995.

Mumbai originated in the southern part (which is in Mumbai district today) and spread geographically starting in the colonial period. The suburban part of Mumbai became densely populated over time due to various factors including population pressure, land markets, and state policies. We divide the city into five zones: British and Neoliberal City, Old Industrial City 1, Old Industrial City 2, Western Neoliberal City, and Northern Neoliberal Hub & Suburbs. The names of these zones are self-explanatory. These zones and the municipal wards that they are made up of are shown in figure 3.

Insert figure 3 here.

3. Caste-Based Spatial Segregation/Coexistence at Different Scales

3.1 Segregation/Coexistence at the EB Level

As we discussed above, the Enumeration Block (EB) is the lowest intra-city level at which information is available in our primary survey (and in the Census). This is a “physical neighborhood” – an apartment block or part of a large apartment block or a small locality. In such a small neighborhood, interactions among residents could be day-to-day and residents live in close physical distance of one another. Tables 1 and 2 present the patterns of co-residence of various social groups at the EB level in Hyderabad and Mumbai, respectively. The proportion of EBs which contain a particular social group are given in parentheses. These can be interpreted as the probability that a randomly selected EB will contain a group. For example, in Hyderabad 59% of EBs contain at least one Dalit individual. In other words, the probability that an EB contains one or more Dalit individuals is 59%. Each cell contains the percentage of EBs where two groups reside together or the probability that a randomly chosen EB contains two groups e.g., for Dalit and OBC co-residence in Hyderabad, this proportion/probability is 53%. The diagonal represents the proportion of EBs where only one specific group resides or the

probability that an EB contains only one specific group e.g., this proportion/percentage for OBCs in Hyderabad is 6%. Using these figures, the conditional probabilities can be computed, and these are also interesting e.g., of the 59% of EBs that contain Dalits in Hyderabad, they co-reside with OBCs, Muslims and Others in 89.83%, 32.20% and 61.02% of them, respectively.¹⁵

The proportions/probabilities in tables 1 and 2, speak for themselves, but some discussion is useful. In Hyderabad, Dalits have their highest co-residence with OBCs followed by Others and Muslims. OBCs have their highest co-residence with Dalits, followed by Others and Muslims. The co-residence of Muslims is in the following order: OBCs, Dalits and Others. Among the four groups, as the diagonal elements reveal, Muslims are the group that is most isolated – they have the highest co-residence with themselves. Examining table 2, we can see that although the patterns in Mumbai and Hyderabad share some similarities, there are two important differences. First, the isolation of groups (as revealed by the sum of the diagonal elements) is less in Mumbai as compared to Hyderabad. This is driven by the fact that Muslims have a significantly lower isolation in Mumbai. Second, Muslims co-reside with upper castes (Others) to a greater extent in Mumbai.

Insert tables 1 and 2 here.

Tables 1 and 2 suggest modest co-residence and a high level of segregation at the EB level. This is reflected by quantitative measures and a comparison with larger spatial units, which we discuss below.

3.2 Segregation/Coexistence in Larger Spatial Units

Moving from EBs to larger spatial units, let us examine zones that we discussed in section 2. In figures 4 and 5, we present the percentages of various social groups that reside in

¹⁵ $89.83\% = 0.53/0.59$ and so on. Note that these percentages do not necessarily add up to 100% because a group can reside in the same EB with multiple other groups, so that an EB could be counted more than once.

these zones in the two cities. As we can observe, in every zone and in both cities, there is a coexistence of social groups. For example, in Hyderabad, in Nizam’s City zone, the shares of Dalits, OBCs, Muslims and Others are about 12%, 50%, 18% and 20%, respectively. In Mumbai, the Western Neoliberal Zone, for example has the following shares of groups: 16% (Dalits), 10% (OBCs), 19% (Muslims), and 54% (Others).

Insert figures 4 and 5 here.

In another contribution (Motiram and Vakulabharanam 2019), we have argued that traditional notions of segregation fail to capture this kind of spatial co-existence. We have termed this co-existence as “Grayness”, conceptualized it as a combination of two components representing spatial integration in terms of income (*IC*) and group-identity (*GC*), and developed a “Grayness Index” (*GI*). In the regression analysis in the next section, we explore the determinants of poverty, which depends upon income. Hence, we only use the latter component (*GC*) in our analysis below. We will therefore describe *GC* in detail and provide an intuitive understanding of the income component (*IC*) and the overall index (*GI*). Consider a city that can be divided into several ($N \geq 2$) spatial units. There is inequality in income both within and among these spatial units, and the share of the latter to overall (i.e., city-level) income inequality can be interpreted as the level of income-based spatial inequality in the city. The inverse of this spatial inequality is the level of income-based spatial integration, which is the first (Income) component (*IC*), and which ranges from 0 (least integrated) to 1 (most integrated).¹⁶ Suppose $G (\geq 2)$ identity groups (e.g. races or caste groups) live in the city, then the inverse of the group-based spatial segregation can be considered as a measure of spatial integration – this is the Group

¹⁶ $IC = \left(1 - \frac{Gini_a}{Gini_t}\right)$. $Gini_t$ is the Gini index for the income distribution of the city and $Gini_a$ is the Gini index for the distribution of mean incomes of spatial units. $\frac{Gini_a}{Gini_t}$ is the spatial inequality for the city and therefore $\left(1 - \frac{Gini_a}{Gini_t}\right)$ can be interpreted as the degree of spatial integration.

Component (GC), which again ranges from 0 to 1. The Grayness Index (GI) combines the two components in a “mean-variance” form, increasing in the average of GC and IC and decreasing in the variance of GC and IC . GI ranges from 0 to 1 and the mean variance form ensures that a mix of GC and IC results in more integration (higher GI) than extreme values of GC and IC .¹⁷

Let $p_g^c (0 < p_g^c < 1)$ and $p_g^m (0 < p_g^m < 1)$ denote the shares of the population belonging to group $g (1, 2, \dots, G)$ living in a city and in the spatial unit $m (1, 2, \dots, N)$, respectively. Let $s^n (0 < s^n < 1)$ denote the share of the population living in spatial unit $n (1, 2, \dots, N)$. The Group Component (GC) is given by:

$$GC = 1 - \left[\frac{\sum_{g=1}^G p_g^c \sum_{m=1}^M \sum_{n=1}^N s^m s^n \left| \frac{p_g^m}{p_g^c} - \frac{p_g^n}{p_g^c} \right|}{2 \sum_{g=1}^G p_g^c (1 - p_g^c)} \right] \quad (1)$$

The term in the square brackets is the Gini index of segregation and therefore GC can be interpreted as the degree of spatial integration of identity groups.¹⁸

In table 3, we present quantitative measures of grayness (GC) in both cities using EBs, Census wards, Subdistricts (for Hyderabad) and Municipal wards (for Mumbai). We can observe that both cities are far more integrated if we use larger spatial units as compared to EBs. We have also presented Duncan-Duncan index, which reveals the same picture – segregation increases as we move from the EB to larger spatial units.¹⁹ In fact, a comparison of race (Black and White) in two American cities (New York and Chicago) with caste (Dalit and Non-Dalit) in

¹⁷ $GI = \frac{(GC+IC)}{2} - \beta \left[\frac{(GC^2+IC^2)}{2} - \left(\frac{GC+IC}{2} \right)^2 \right]$. For example, it can be easily shown that a city with $GC=IC=0.5$ has a higher GI than another city with $GC=1$ and $IC=0$, and $GC=0$ and $IC=1$.

¹⁸ In the Gini index of inequality for incomes, a comparison is made between all income pairs, i.e. incomes of individuals in every pair. Here, the comparison is between all pairs of spatial unit-city ratios $\left(\frac{p_g^m}{p_g^c} \right)$ for every spatial unit ($m=1, \dots, M$) and every group ($g=1, \dots, G$). Other ideas e.g., Lorenz curve, follow from this.

¹⁹ The Duncan-Duncan index is usually defined and used when there are two groups. Since we have four groups here, the index is calculated as an average of all the pairs.

Hyderabad and Mumbai, reveals that Indian cities are more spatially integrated for larger spatial units. This is clearly revealed from the Grayness Indices (GI), which are presented in figure 6.

Given that we are considering two groups in both cases (i.e., American and Indian cities), we can also examine Duncan-Duncan dissimilarity indices. These reveal the same picture: Hyderabad (0.533), Mumbai (0.495), Chicago (0.726) and New York (0.706).²⁰

Insert table 3 and figure 6 here.

A caveat is needed before we proceed further. The increase in coexistence when we move from smaller to larger spatial units is to be expected. The increase in GC and the decrease in Duncan-Duncan index, reflect the property that the merging of smaller units to form larger units increases coexistence, and therefore changes these measures. However, what is important to emphasize is that the nature of inter/intra-caste interactions and social processes differ across various spatial scales. Processes of exclusion that operate at the EB-level are not effective and/or not employed in larger spatial units. We will discuss more about this in the conclusions, so in the interests of space, we will highlight two processes here. First, is discrimination in housing markets. Studies (e.g., Thorat et al. 2015) have pointed out that lower castes are discriminated against in rental markets for housing and are forced to face harsher terms when they are able to obtain homes on rent. Such discrimination is more prevalent and easier to enforce at the level of EBs (e.g., in apartment complexes). Second, is food taboos, using which individuals belonging to certain communities are excluded. These are again enforced more rigorously in smaller localities like EBs. In larger spatial units, individuals and groups can also make demands on the state for the provision of better public goods and services like water and garbage collection. It is worth

²⁰ Indian cities: Source (Household Survey), Spatial units (Census Wards). American cities: Source (American Community Survey 2016, 5-year estimates), Spatial units (Census Tracts). For both Indian and American cities, GC is computed for individuals and IC is computed based upon Gini indices for household income. GI is computed with $\beta = 0.95$.

noting that some larger spatial units (e.g., Municipal wards) have elected representatives who are accountable to their residents for the provision of these goods and services.²¹ Finally, in larger neighborhoods, richer households who work in the formal sector (e.g., engineers, doctors, and high-ranking government officials) benefit from and in-turn benefit poorer households in the informal sector (e.g., domestic help, cook, painter etc.) who live in the vicinity. We could refer to this as “dependent formality”.²² Given this, we examine the implications of caste-based coexistence in larger spatial units in the next section.

4. Spatial Coexistence and Economic Development

Does greater caste-based coexistence confer any benefits, and if so, what are these? We answer this question by focusing on two development outcomes – one monetary (poverty) and the other, non-monetary (education). Since poverty depends upon income, we only use the Group Component (*GC*) in our analysis and treat it as a measure of grayness. *GC* is potentially endogenous, so to find an instrument for it, we draw on history to identify the various types of urban processes that have shaped Hyderabad and Mumbai.

Hyderabad emerged more than four centuries ago and like other traditional Indian cities, a “pre-modern” urban process shaped it before the advent of colonialism and conscious attempts of modernization. During the late nineteenth and early twentieth centuries, the rulers of Hyderabad kingdom embarked on a serious modernization project and implemented various initiatives e.g., promotion of Western medicine and instruction in English, setting up of educational institutions, and establishment of railways and industries.²³ As we discussed in

²¹ In Hyderabad city, the census wards are also municipal wards and have elected representatives.

²² There is considerable evidence of links between the formal and informal sectors in developing countries, both at the household and enterprise level. Several authors have argued that conceptualization of the informal sector in older dual-sector models like Harris-Todaro is simplistic and far removed from reality. On these issues, see Guha-Khasnabis (2007) and Chen and Carre (2020).

²³ These initiatives have been discussed by scholars (Alam 1973; Subbarao 2007) and in the media (Sharma 2020).

Section 2, a British representative resided in the city, and an army cantonment was established in this area (Secunderabad). This modernization project was continued under the auspices of the central (federal) and state governments after independence. Industrial areas/estates were set up in some parts of the city e.g., Sanatnagar. We could describe the urban process that unfolded from the nineteenth century to the 1980s as the “modern and pre-neoliberal urban process”. In 1991, the Indian government initiated neoliberal policy reforms, which curtailed the role of the government (public sector) and gave a bigger role to the private sector and markets (local, national, and global). Apart from the roles of government and market, the resultant urban process, which we label as “neoliberal urban process” is different from the modern pre-neoliberal one in the types of industries that were established and inequality. During the pre-neoliberal phase, industries were capital intensive and in sectors such as chemicals and pharmaceuticals. On the contrary, the emphasis in the neo-liberal phase was on high-end services such as Information Technology (IT) and finance. Real estate and speculation based on land also saw a major fillip during the neoliberal period. Both in India and in the city of Hyderabad, neoliberalism opened up newer avenues for accumulation and there was a rise in inequality (Vakulabharanam and Motiram 2012; Prasad and Rambarki 2023).

The case of Mumbai is somewhat different from that of Hyderabad. The city, as we know it, emerged during the colonial period. Therefore, for our purposes, it is useful to identify and distinguish between only two urban processes – “modern pre-neoliberal” and “neoliberal”. During the colonial period, industries like textiles, shipbuilding and banking emerged and the city grew rapidly due to migration from different parts of the country.²⁴ Growth was concentrated mostly in what is referred to as the “Island city” - in the zones that we labeled as

²⁴ See the District Census Handbooks of Greater Bombay district till 1991 and Mumbai and Mumbai Suburban districts since 2001.

“British Neoliberal” and “Old Industrial City I”.²⁵ Communal housing (*chawls*) was built for textile workers. After independence, the emphasis on industrialization continued with the establishment of industrial areas/zones. On the eastern fringes of the city, in an area that we described as Old Industrial Zone II, on marshy land, the government set up polluting and hazardous industries (nuclear power, petroleum) and settled people - mostly poor and lower-castes. Contrary to this trend, the textile industry collapsed in the 1980s after a prolonged strike, although chawls continued to be an important form of housing in the city. All these phenomena characterize the “modern pre-neoliberal” urban process. Mumbai is the commercial and financial capital of India, so once neoliberal reforms were launched, these had a profound impact on the city. An important component of the neoliberal reforms was changes to the finance/banking sector, and these led to the dissolution of older public-sector financial institutions (e.g., Indian Credit and Investment Corporation of India), creation of private banks (e.g., ICICI, HDFC) and emergence of various types of private financial institutions (e.g., mutual funds; more recently crypto exchanges). These developments created a new class of billionaires and high net-worth individuals with roots in finance and banking (Motiram and Limaye 2023). The real estate sector and land-based speculation also grew, in certain areas on account of the decline of the textile industry, which freed up land that was being occupied by mills. Bandra-Kurla-Complex (BKC) emerged as a new business district (in the zone that we labelled as “Western Neoliberal”), and as an alternative to South Bombay/Mumbai. Today it houses the diamond bourse and several financial institutions. These phenomena help us demarcate and distinguish the “neoliberal urban process”.

²⁵ See Risbud (2003). Wards A, B, C, D, E, FS, FN, GS, and GN make up the “Island City”.

Having identified these urban processes, we divide neighborhoods in Hyderabad and Mumbai into two types – Type I and Type II. Type I neighborhoods are those that have been marked *primarily* by the modern pre-neoliberal urban process, whereas Type II neighborhoods are others i.e., marked by pre-modern or neoliberal urban processes in Hyderabad and neoliberal process in Mumbai. There is considerable evidence (e.g. Alam 1973; Adarkar 2012) that the modern pre-neoliberal process contributed to integration by bringing together different communities among the working people. So, we construct the following instrument for neighborhood-level integration: $Z_j=1$ if neighborhood j is Type I and 0 otherwise. Before we proceed further, two clarifications are in order. First, all neighborhoods in any Indian city would bear some imprint of various urban processes that have unfolded in the city. However, we believe that there is analytical insight in characterizing the primary or most important urban process that has impinged on a particular neighborhood. Second, while we are arguing that the modern pre-neoliberal process has led to more integration, we are not advocating a version of the modernization hypothesis or claiming that modernization/modernity is “good”. In fact, as is clear from the above discussion, we have distinguished between different modern urban processes and highlighted their dark side e.g., rising inequality.²⁶

Our claim is that higher neighborhood integration causes better development outcomes and neighborhoods marked by modern pre-neoliberal process (Type I) are more integrated. Formally, let Y_i denote the outcome of interest for a household or individual i . We estimate the following model:

$$Y_i = \alpha_1 + \beta_1 X_i + \gamma_1 GC_i + u_{1i} \quad (2)$$

²⁶ We are also treating modernity as a disjuncture in Indian history. In this process, we are ignoring the debate about whether certain social and cultural movements and phenomena (e.g., *Bhakti* movement) that emerged before the advent of colonialism and that tried to reform Indian society from within, should be treated as signaling Indian modernity. These issues are not relevant for the cities of Hyderabad and Mumbai.

$$GC_i = \alpha_2 + \beta_2 X_i + \gamma_2 Z_i + u_{2i} \quad (3)$$

X_i is a vector of characteristics of i . We use subdistricts and municipal wards (combining small wards) as neighbourhoods in Hyderabad and Mumbai, respectively. GC_i is the grayness (in terms of social group) of the neighborhood in which i resides. Z_i is the instrument for GC_i that we described above. u_{1i} and u_{2i} are error terms. For social-group grayness we consider two groups: deprived and others (non-deprived). In Hyderabad, the deprived group consists of Dalits, OBCs and Muslims and in Mumbai, it consists of Dalits and OBCs. The difference between the cities in the composition of deprived (and non-deprived) groups is due to the high percentage of Muslims in Hyderabad and their lower economic status. As we would expect, the average social group grayness of Type I neighborhoods is much higher than the same for other neighborhoods. The average for Type I neighborhoods is higher by 11 and 20 percentage points in Hyderabad and Mumbai, respectively.

Given substantial controversy concerning the definition of regional and national poverty lines in India,²⁷ we rely on a commonly used relative poverty line, which is half the median per-capita income of a city. In table 4, we present results of a two-stage instrumental variable probit regression of the probability that a household is poor. We control for class status of the household apart from the grayness of the neighborhood. The positive sign and statistical significance of the instrument in the first stage, verifies the intuition that the nature of the urban process influences grayness and the modern pre-neoliberal urban process fosters it.²⁸ The result

²⁷ In India, there has been considerable debate and controversy about the official poverty line. The poverty line prescribed in 2009 by the committee appointed by the Planning Commission (chaired by Dr. Suresh Tendulkar) was widely criticized and deemed to be too low (Subramanian 2011; Motiram and Vakulabharanam 2015). The Planning Commission appointed another committee (chaired by Dr. Rangarajan) which came up with a new poverty line. However, even this new poverty line was criticized (Subramanian 2014). The National Democratic Alliance, which came to power in 2014, abolished the Planning Commission and replaced it with a think tank – National Institute for Transforming India (NITI) Aayog. The NITI Aayog has not arrived at an official poverty line.

²⁸ In the first stage regression, the model passes the F -test of joint significance. Given that there is only one endogenous regressor and one additional instrument, we can infer that the instrument is valid (i.e., not weak).

of a Wald test of exogeneity indicates that an instrumental variable regression is required. In the second stage, the coefficient on the measure of grayness is statistically significant and negative, indicating the positive association between neighborhood grayness and lower poverty – households living in neighborhoods that are more integrated are less likely to be poor. To give a sense of the practical magnitude of the effect, we use the estimated coefficients from the second stage. We examine the difference in predicted likelihood of being poor for underprivileged households (Class dummy=0) across two neighborhoods that are different in terms of grayness: minimum and average (median). In Hyderabad and Mumbai, these differences are about 36 and 12 percentage points, respectively. This reflects the high magnitude and policy significance of grayness.

Insert table 4 here.

For education, we examine the probability that an adult has completed college-level or higher education.²⁹ Table 5 presents results of a two-stage instrumental probit regression. Again, we can observe that the instrument has the right size, sign, and statistical significance. The positive and statistically significant coefficient on the measure of grayness indicates that individuals living in more integrated neighborhoods are more educated.³⁰ The results for the other coefficients are on expected lines e.g., women are less likely to have a college education compared to men. To evaluate the magnitude of the impact of grayness, we conduct thought experiments like those in the case of poverty using the following case: women from underprivileged households with average (sample mean) education for the household head. We examine the difference in predicted probability of such an individual possessing college or

²⁹ We include post-high school diploma under this and choose a cut-off of 21 years to define adults. Only a small proportion older than 21 years are still enrolled in educational institutions.

³⁰ As in the case of poverty, the instrument is valid, and a Wald test shows that an instrumental variable regression is required.

higher education across two neighborhoods: least grayness and average (median) grayness. In Hyderabad and Mumbai, these differences are about 10 and 13 percentage points, respectively. As in the case of poverty, these figures reflect the high magnitude and policy significance of grayness.

Insert table 5 here.

Alternative specifications including different exogenous variables, different poverty thresholds, other measures of educational achievement and different age thresholds show that the results are robust.³¹ We have also run the above regressions for the subsample of just the deprived groups (which include Dalits and OBCs) in both the cities and obtain the same results – spatial integration is beneficial in general, but also for deprived groups. What explains the results linking neighborhood grayness to better development outcomes? Could gray neighborhoods have systematically better schools? Quality of schools, particularly public schools, varies across neighborhoods in cities in the US and some other developed countries. This is not the case in Indian cities. In fact, one of the major shortcomings of India’s development strategy is the failure of the state in providing quality education, particularly at the primary level (PROBE 1999). As a result, the quality of public education is low and largely uniform across neighborhoods. Even the poor take resort to private education and households obtain education from schools that are outside their neighborhood of residence. Given this, there are other explanations. We have already discussed two channels in the previous section viz., dependent formality and the ability of groups to make claims on the state. As we mentioned above, communal residential structures (e.g., Chawls) arose to house workers in the textile mills and continue to this day in Mumbai. Studies (e.g., Adarkar 2012) argue that Mumbai’s chawls facilitated a more politically active and

³¹ We have not reported these results in the interests of space, but they are available upon request.

integrated consciousness.³² Such consciousness could enhance neighborhood capacity for collective action, improving outcomes. Tighter spatial integration could also produce better relationships among communities, tolerance, and “cosmopolitanism”. Cosmopolitanism is a phenomenon identified with the mutual co-existence of communities in South Asia and has been theorized as distinct from modern forms of tolerance (Nandy 2010).³³ Better relationships among communities could translate into better outcomes e.g., through better job opportunities by sharing of knowledge.

5. Discussion and Conclusions

In the above analysis, we have drawn on a primary survey from Hyderabad and Mumbai to explore the interaction between caste and city space. Unlike previous studies that have used the Census, we incorporate OBCs into our analysis (and not just SCs and STs). We are also able to show how religion and caste intersect in city spaces. We show that caste-based residential segregation is high at lower spatial scales but is relatively lower at higher spatial scales. While this is unsurprising, spatial co-existence at these higher scales has consequences – it is conducive to better development outcomes – lower likelihood that households are poor and higher likelihood that adults are better educated. We also identify mechanisms that explain our findings.

To return to Ambedkar, with whom we started this paper, it is clear that Indian cities and urbanization in India have not lived up to his expectations. Ambedkar’s expectation that urbanization will weaken the caste system and its direct mechanisms (e.g., endogamy) has not come true. However, space as an analytical construct plays a complex role in Indian cities and

³² A description of life in a Chawl will help illustrate our point: “Mumbai’s Chawls ... are an essential part of the city’s culture. The residents, despite the cramped spaces, have a strong sense of community. They celebrate festivals together and lend a helping hand to each other in times of crises.” (Patil 2017).

³³ One recent illustration of this phenomenon is from Datta (2019), which presents a fascinating ethnographic account of the co-existence of multiple communities in Jammu city in North India. Jammu is not a metropolis, and is in fact, a much smaller city than both Hyderabad and Mumbai. Given this, and our quantitative methodology, the findings from Jammu complement ours.

indirectly supports Ambedkar's optimism about urbanization. At lower spatial scales, caste is still an important means of segregation. However, at a higher spatial scale, coexistence has positive material (developmental) effects achieved in part due to the creation of a spatially shared consciousness.

What needs to be done to extend these positive socio-spatial mechanisms in Indian cities to all spatial scales? As we saw in Section 3, one of the factors that increases caste-based segregation is discrimination in the housing market. Therefore, real estate markets need to be regulated stringently to prevent caste-based discrimination. Policies should also be implemented to facilitate homeownership by lower castes. In this regard, several measures have been suggested e.g., prioritizing lower castes in the provision of public housing, and making it easier for lower castes to finance private housing (Thorat et al. 2015). There are several existing laws that are meant to regulate the private real estate sector, protect buyers, and ensure that the sector serves a larger social purpose (which benefits the lower castes and other marginalized groups). However, developers and builders have used loopholes to subvert these laws or plainly not followed them.³⁴ Therefore, laws in existence and laws that will be put in place in the future, need to be implemented carefully.

In the past three to four decades, the Indian state has changed its conceptualization of cities from "livable cities" to "world class cities" or "entrepreneurial cities" (Banerjee-Guha 2009; Gooptu 2011). This has resulted in the eviction of the poor and marginalized groups from certain parts of the cities and their reduced access to the commons. Civil society organizations (e.g., housing societies) have also engaged in activism, sometimes taking recourse to the legal process, for the same purpose (e.g., Harriss (2006); Ghertner (2011)). These changes and the

³⁴ For a recent example, see Naik (2023).

paradigm underlying them, sometimes described as “neoliberal urbanism” have increased segregation and eroded the “right to the city”. While the explicit target of such measures has not always been the lower castes, they have been the victims given their general marginalized status and overrepresentation among the poor. Our findings suggest that these measures should be reversed or at least arrested e.g., by creating new commons and making existing commons more accessible to all.

References

- Adarkar, N. (2012) *The Chawls of Mumbai: Galleries of Life*. Mumbai: Imprint One.
- Alam, M. (1973) *Metropolitan Hyderabad: A Strategy for Development*. Mumbai: Asia Publishing House.
- Banerjee, B. and J.B. Knight (1985) "Caste Discrimination in the Indian Urban Labour Market." *Journal of Development Economics*, 17 (3), pp. 277-307.
- Banerjee, D. and M.G. Mehta (2014) "Caste and Capital in the Remaking of Ahmedabad," *Contemporary South Asia*, 25 (37), pp. 1-14.
- Bharathi, N., Malghan, D.V. and A. Rahman (2018) "Isolated by Caste: Neighbourhood-scale Residential Segregation in Indian Metros," *IIM Bangalore Research Paper*, No. 572.
- Chakravarty, S. and E. Somanathan (2008) "Discrimination in an Elite Labour Market? Job Placements at the Indian Institute of Management-Ahmedabad," *Discussion Papers in Economics, Planning Unit, Indian Statistical Institute, Delhi*.
- Chandravarkar, R. (2009) *History, Culture and the Indian City*. New York: Cambridge University Press.
- Chen, M. and F. Carre (2020) (eds.) *The Informal Economy Revisited*. London: Routledge.
- Datta A (2019) "Seeking Sanctuary, Remembering Jammu: Cosmopolitan Ethics Outside the Metropolis," *The India Forum*, November 17.
- Dirks, N.B. (2001) *Castes of Mind: Colonialism and the Making of Modern India*. Princeton: Princeton University Press.
- Dossal, M. (2010) *Mumbai, Theatre of Conflict, City of Hope: 1660 to Present Times*. New Delhi: Oxford University Press.
- Dwivedi, S and R. Mehrotra (1995) *Bombay: The Cities Within*. Bombay: Eminence Designs.

- Ganguly, S. (2018) "Socio-Spatial Stigma and Segregation: A Balmiki Colony in Central Delhi," *Economic and Political Weekly*, 53 (50).
- Gaynor, L. and C. Jaffrelot (eds.) (2011) *Muslims in Indian Cities: Trajectories of Marginalization*. New York: Columbia University Press.
- Ghertner A (2011) Rule by Aesthetics: World Class City Making in Delhi. In: Roy A and Ong A (eds) *Worlding Cities: Asian Experiments and the Art of Being Global*. Oxford, UK: Blackwell Publishing.
- Gooptu N (2011) Economic liberalization, urban politics and the poor. In: Ruparelia S, Reddy S, Harriss J and Corbridge S (eds) *Understanding India's New Political Economy: A Great Transformation?* London: Routledge.
- Guha-Khasnabis, B., R. Kanbur and E. Ostrom (eds.) (2007) *Linking the Formal and Informal Economy: Concepts and Methods*. New York: Oxford University Press.
- Gupta, D. (ed.) (1997) *Social Stratification*. New Delhi: Oxford University Press.
- Gupta D (2000) *Interrogating Caste: Understanding Hierarchy and Difference in Indian Society*. New Delhi: Penguin Books.
- Harriss J (2006) Middle-Class Activism and the Politics of the Informal Working Class. *Critical Asian Studies* 38(4): 445-65.
- Haque, I. (2016) "Discriminated Urban Spaces: A Study of Spatial Segregation in Urban West Bengal," *Economic and Political Weekly*, 51 (46), pp. 41-50.
- Iyer, L., Khanna, T. and A. Varshney (2013) "Caste and Entrepreneurship in India," *Economic and Political Weekly*, 48 (6), pp.52-60.
- Jana, A. and G. Bhan (2015) "Reading Spatial Inequality in Urban India," *Economic and Political Weekly*, 50 (22), pp. 49-54.

Jayaraj, D. and S. Subramanian (2013) "On the Inter-Group Inclusiveness of India's Consumption Expenditure Growth," *Economic and Political Weekly*, 48 (10), pp. 65-70.

Jodhka, S.S. (2010) "Dalits in Business: Self-employed Scheduled Castes in North-West India," *Economic and Political Weekly*, 45 (11), pp.41-48.

Jodhka, S.S. (2017) *Caste in Contemporary India 2nd Edition*. New Delhi: Routledge.

Judge, P.S. (2021) "Ambedkar, Gandhians and the Indian Village," *Economic and Political Weekly*, 56 (12), pp. 31-50.

Madheswaran, S. and P. Attewell (2007) "Caste Discrimination in the Indian Urban Labour Market: Evidence from the National Sample Survey," *Economic and political Weekly*, 42 (41), pp. 4146-4153.

Mishra, S. (2015) "Ambedkar and the Economics of Segregation," *Mint*, Jul 4, 2023.

Motiram, S. and V. Vakulabharanam (2015) "Towards Understanding Poverty in India," In: Akundy, A and R.K. Mishra (eds.) *The Indian Social Sector: Trends and Issues*. New Delhi: Academic Foundation, pp. 41-57.

Motiram, S. and V. Vakulabharanam (2019) "On the Measurement of "Grayness" of Cities," In Dasgupta, I and M. Mitra (eds.) *Deprivation, Inequality and Polarization: Essays in Honour of Satya Ranjan Chakravarty*. Singapore: Springer, pp. 211-220.

Motiram, S. and V. Vakulabharanam (2023) "Mapping Religion, Space and Economic Outcomes in Indian Cities," Working Paper, University of Massachusetts Amherst and Boston.

Motiram, S. and K. Limaye (2023) "Wealth and its Accumulation in Bombay/Mumbai," *SCIS Working Paper No. 49*. Johannesburg: University of the Witwatersrand.

Naik, A (2023) “Forged RERA Registrations: Loopholes that Builders Exploit & a Possible Solution,” *Moneylife* May 8, 2023 (<https://www.moneylife.in/article/forged-rera-registrations-loopholes-that-builders-exploit-and-a-possible-solution/70688.html>).

Nandy, A (2010) “Is it Necessary to Love Your Neighbours? Living with Radical Diversities and the Right To Be Oneself,” 3rd UniSA Nelson Mandela Lecture and Adelaide Festival Centre’s OzAsia Festival Keynote Address, University of South Australia, Adelaide.

Patil, K (2017) “In pics: A look inside Mumbai’s Cramped but Comfortable Chawls,” *The Hindustan Times*, April 21.

Prasad, N.P. and “Wealth Elites and their Accumulation Dynamics: Hyderabad City Region,” *SCIS Working Paper No. 52*. Johannesburg: University of the Witwatersrand.

Risbud, N. (2003) “The Case of Mumbai, India,” In *Understanding Slums: Case Studies for the Global Report on Human Settlements 2003*. UN-Habitat:
https://www.archidev.org/IMG/pdf/Mumbai_DPU_.pdf

Rawat, R.S. and K. Satyanarayana (eds.) (2016) *Dalit Studies*. Durham: Duke University Press.

Sadana, N. and S. Thorat (2009) “Caste and Ownership of Private Enterprises,” *Economic and Political Weekly*, 44 (23), pp. 13-16.

Sanyal, K (2009) *Rethinking Capitalist Development: Primitive Accumulation, Governmentality and Post-Colonial Capitalism*. New Delhi: Routledge.

Sharma, D. (2020) “Hyderabad’s Culture, Modernity Intertwined,” *The Tribune*, December 7.

Sidhwani, P (2015) “Spatial Inequalities in Big Indian Cities,” *Economic & Political Weekly*, 50 (22), pp.55-62.

Singh, G. and T. Vityathil (2012) “Spaces of Discrimination: Residential Segregation in Indian Cities,” *Economic and Political Weekly*, 47 (37), pp. 60-66.

Soja, E (1980) "The Socio-spatial Dialectic," *Annals of American Association of Geographers* 70 (2), pp. 207-225.

Srinivas, M.N. (1996) *Village, Caste, Gender and Method: Essays in Indian Social Anthropology*. New Delhi: Oxford University Press.

Subba Rao, C.V. (2007) *Hyderabad: The Social Context of Industrialization: 1875-1948*. Hyderabad: Orient Longman.

Subramanian, S (2011) "The Poverty Line: Getting it Wrong Again," *Economic and Political Weekly*, 46 (48), pp. 37-42.

Subramanian, S (2014) "The Poverty Line: Getting it Wrong Again... and Again," *Economic and Political Weekly*, 49 (47), pp. 66-70.

Upadhyaya, C. and S. Rathod (2021) "Caste at the City's Edge: Land Struggles in Peri-Urban Bengaluru," *South Asia Multidisciplinary Academic Journal*, (26), pp. 1-28.

Vakulabharanam, V. and S. Motiram (2012) "Understanding Poverty and Inequality in Urban India Since Reforms: Bringing Quantitative and Qualitative Approaches Together," *Economic and Political Weekly*, 47 (47-48), pp. 44-52.

Waghmare, S (2019) "Community, Not Humanity: Caste Associations and Hindu Cosmopolitanism in Contemporary Mumbai," *South Asia: Journal of South Asian Studies*, 42 (2), pp.375-393.

Tables and Figures

Table 1: Co-residence of Groups (Hyderabad)

	Dalit	OBC	Muslim	Other
Dalit (59.00%)	0.00%	53.00%	19.00%	36.00%
OBC (81.00%)	53.00%	6.00%	24.00%	52.00%
Muslim (43.00%)	19.00%	24.00%	13.00%	15.00%
Other (53.00%)	36.00%	52.00%	15.00%	0.00%

Source: Authors' computations from survey data.

Note: Out of the total of 100 EBs: 59% have at least one Dalit individual, 0% have only Dalits, 53% have both Dalits and OBCs, 19% have both Dalits and Muslims, and 36% have both Dalits and Others. The figures for other groups can be interpreted in a similar manner.

Table 2: Co-residence of Groups (Mumbai)

	Dalit	OBC	Muslim	Other
Dalit (56.13)	3.06%	31.63%	25.51%	46.94%
OBC (56.12%)	31.63%	0.00%	19.39%	51.02%
Muslim (47.96%)	25.51%	19.39%	1.02%	44.90%
Other (89.80%)	46.94%	51.02%	44.90%	7.14%

Source: Authors' computations from survey data.

Note: For interpretation, please see note to table 1.

Table 3: Group-based Segregation/Integration at Various Scales, Hyderabad and Mumbai

		Hyderabad			Mumbai	
	EB	Census Ward	Subdistrict	EB	Census Ward	Municipal Ward
Duncan-Duncan	0.6504	0.5916	0.4045	0.6046	0.4322	0.2894
Grayness (<i>GC</i>)	0.1935	0.2464	0.4507	0.2209	0.3876	0.5985

Source: Authors' computations from survey data.

Note: For the definition of *GC*, please see section 3.

Table 4: Instrumental Variable Probit Analysis

(Dependent Variable: 1 if Household is poor and 0 if not)

	Hyderabad	Mumbai
Stage II		
Grayness (Social Group)	-3.259* (0.531)	-0.794*** (0.445)
Class Dummy	-0.734* (0.201)	-1.174* (0.288)
Constant	0.762* (0.302)	-0.430 (0.300)
Stage I		
Class Dummy	0.046* (0.016)	0.005 (0.021)
Instrument	0.118* (0.012)	0.216* (0.014)
Constant	0.412* (0.008)	0.483* (0.011)
Chi ² (Exogeneity Test)	15.450*	5.940*

Source: Authors' computations from survey data.

Notes: 1. Standard errors in parentheses. *, ** and *** denote that the coefficient is statistically significant at 99%, 95% and 90% confidence level, respectively.

2. For details of the computation of grayness, see section 3.

4. Class dummy: 1 if elite, professional or retired and 0 otherwise.

Table 5: Instrumental Variable Probit Analysis**(Dependent Variable: 1 if individual possesses college or higher education and 0 if not)**

	Hyderabad	Mumbai
Stage II		
Grayness (Social Group)	2.060*	2.353**
	(0.412)	(1.061)
Dummy for Female	-0.265*	-0.155*
	(0.058)	(0.062)
Class Dummy	0.226*	0.468*
	(0.075)	(0.074)
Years of Education of Head	0.111*	0.117*
	(0.008)	(0.016)
Constant	-2.618*	-3.152*
	(0.145)	(0.473)
Stage I		
Dummy for Female	-0.005	-0.004
	(0.007)	(0.009)
Class Dummy	0.055*	-0.043*
	(0.010)	(0.012)
Years of Education of Head	0.000	0.000
	(0.001)	(0.001)
Instrument	0.118*	0.042*
	(0.008)	(0.009)
Constant	0.403*	0.616*
	(0.008)	(0.011)
Chi ² (Exogeneity Test)	16.360*	2.750***

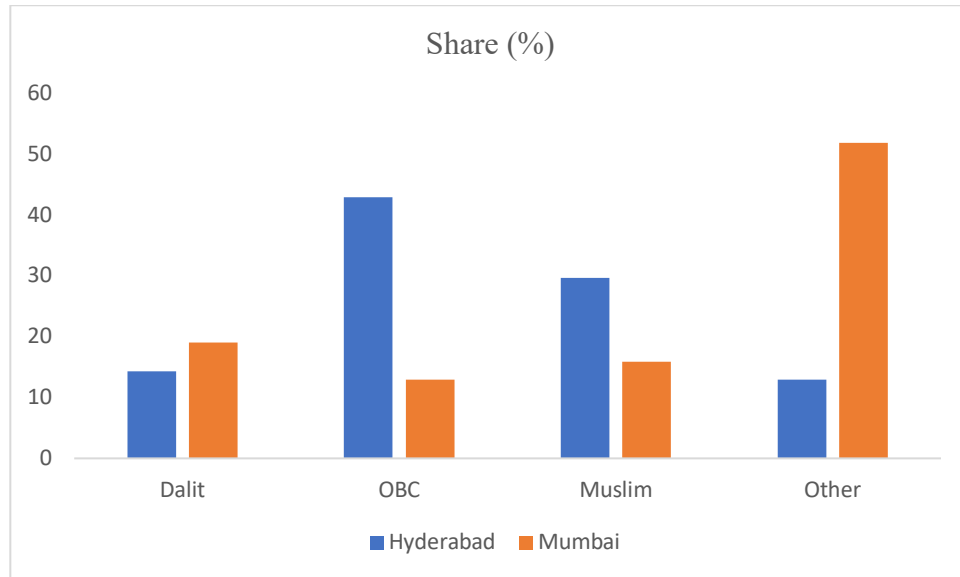
Source: Authors' computations from survey data.

Notes: 1. Standard errors in parentheses. *, ** and *** denote that the coefficient is statistically significant at 99%, 95% and 90% confidence level, respectively.

2. For details of the computation of grayness, see section 3.

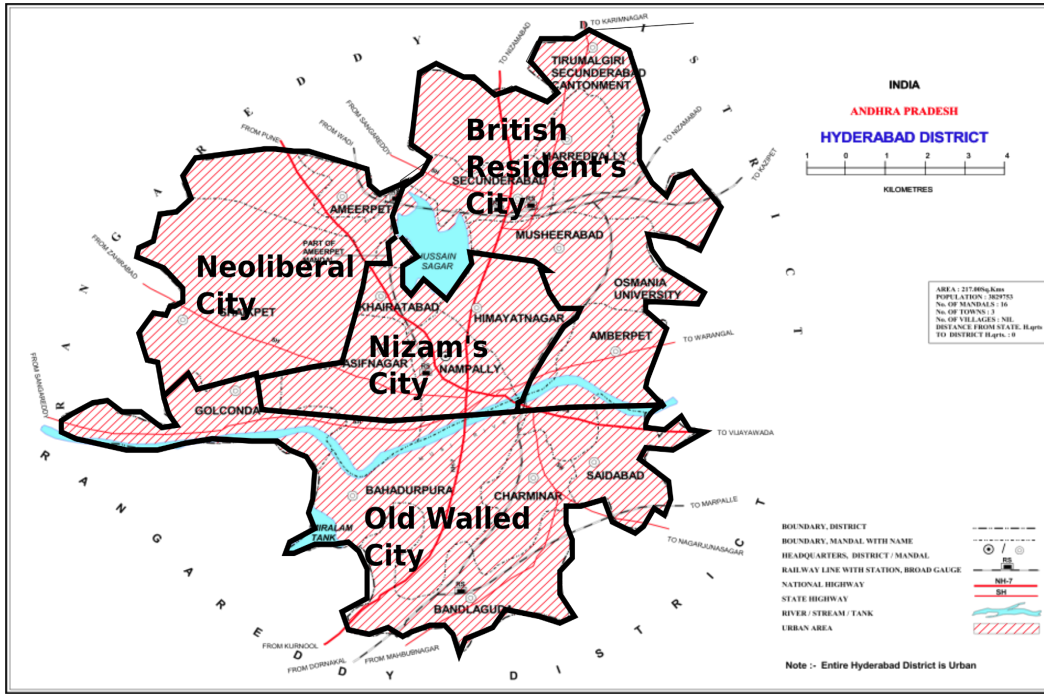
4. Class dummy: 1 if elite, professional or retired and 0 otherwise.

Figure 1: Group Composition, Hyderabad, and Mumbai



Source: Authors' computations from survey data.

Figure 2: Zones in Hyderabad



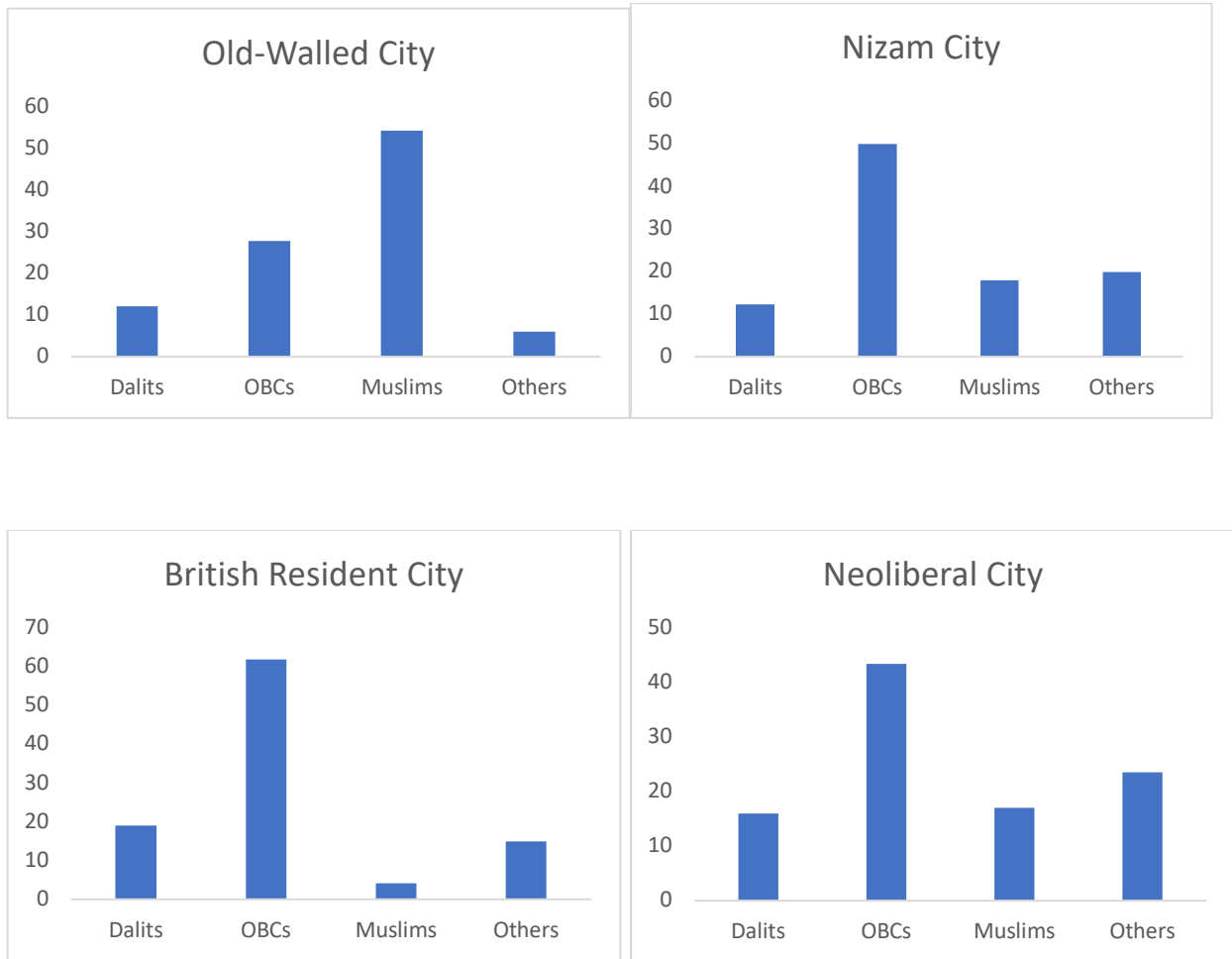
Source: District Census Handbook, Census of India 2011. We overlaid the zones on the map provided by the Census.

Figure 3: Zones in Mumbai



Source: Municipal Corporation of Greater Mumbai. We overlaid the zones on the map.

Figure 4: Spatial Co-existence of Groups (Hyderabad)



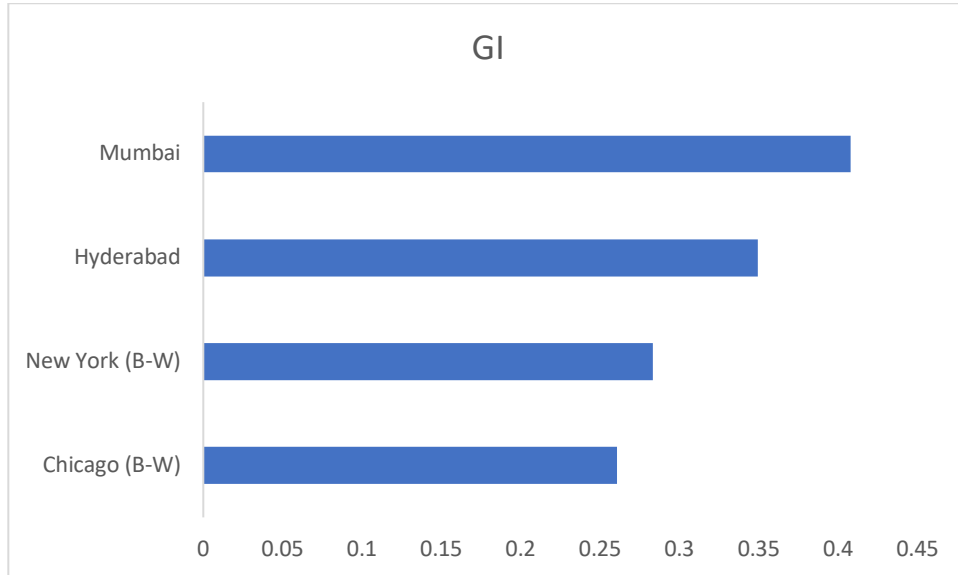
Source: Authors' computations from survey data. For the definitions of these groups and zones, see Section 2 and Figure 2, respectively.

Figure 5: Spatial Co-existence of Groups (Mumbai)



Source: Authors' computations from survey data. For the definitions of these groups and zones, see Section 2 and Figure 3, respectively.

Figure 6: Comparison of Grayness Index (GI) of Indian and American Cities



Source: Authors' Computation from Household Survey (India) and American Community Survey 2016, 5-year estimates (US cities). Spatial units are Census Wards (India) and Census Tracts (US). Groups are Dalits and Non-Dalits (India) and Blacks and Whites (US). For both Indian and American cities, GC is computed for individuals and IC is computed based upon Gini indices for household income. GI is computed with $\beta = 0.95$.